

pTNMAX (general vector)

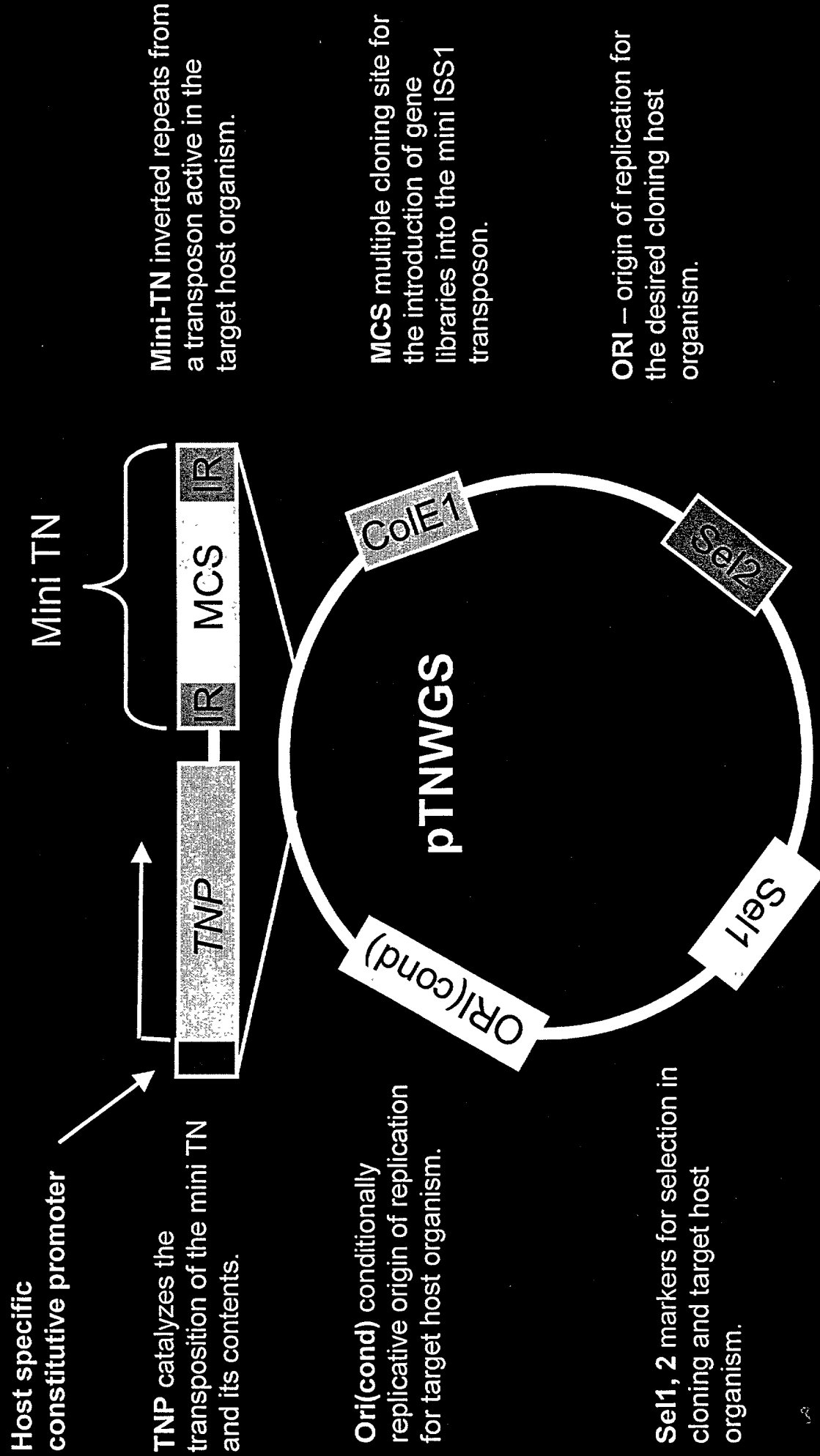


Figure 1 A

pWGS:5

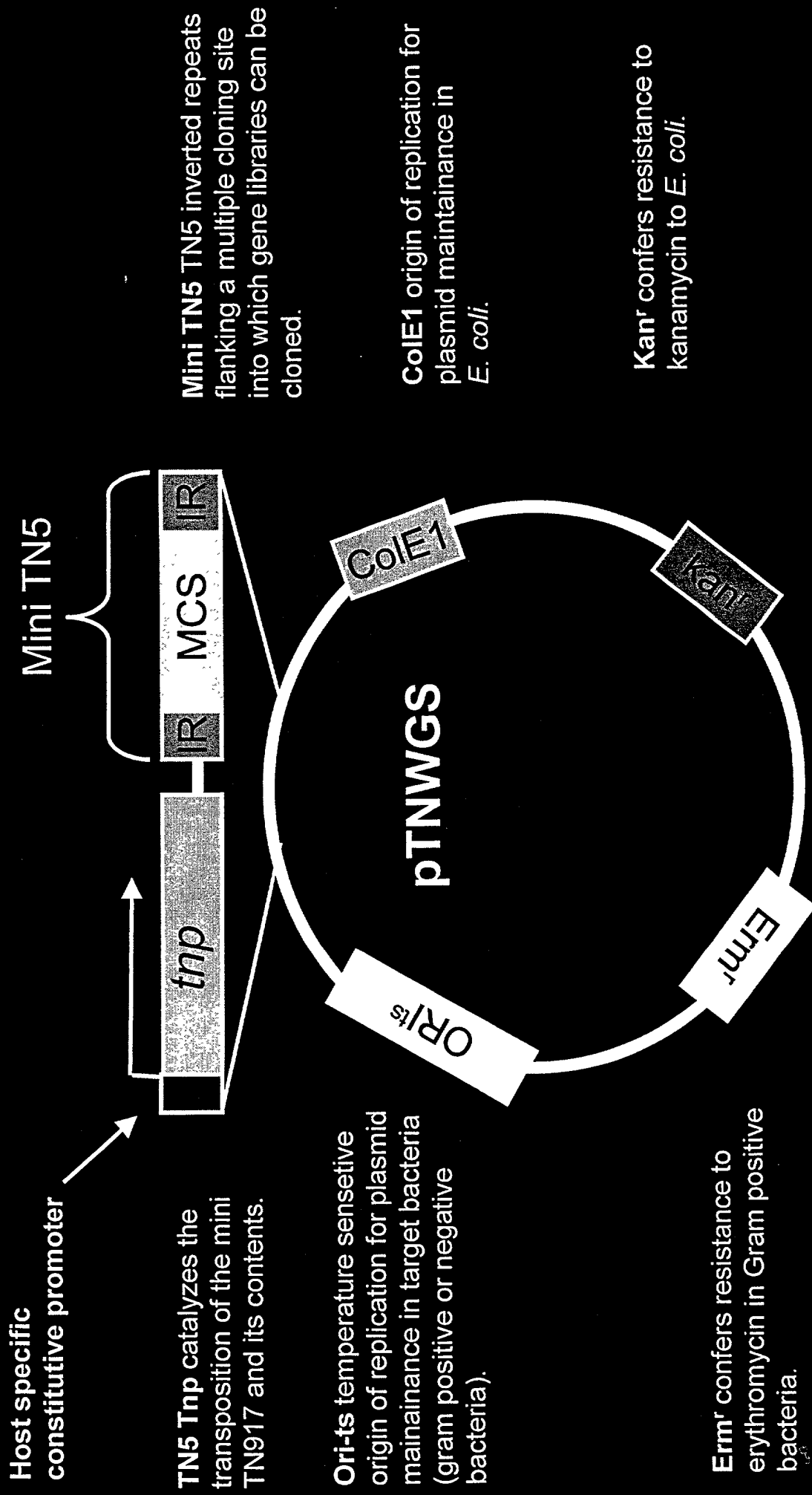


Figure 1B

pWGS:917

Host specific

promoter – *nisA*
promoter for lactic acid
bacteria.

917 TspR TspA catalyzes
the transposition of the mini
917 and its contents
(transposase/resolvase)

Mini TN917

MCS multiple cloning site for
the introduction of gene
libraries into the mini TN917
transposon.

PG+ temperature sensitive
origin of replication for plasmid
maintenance in Gram positive
bacteria.

ColE1 origin of replication for
plasmid maintenance in
E. coli.

Erm^r confers resistance to
erythromycin in Gram positive
bacteria.

Kan^r confers resistance to
kanamycin to *E. coli*.

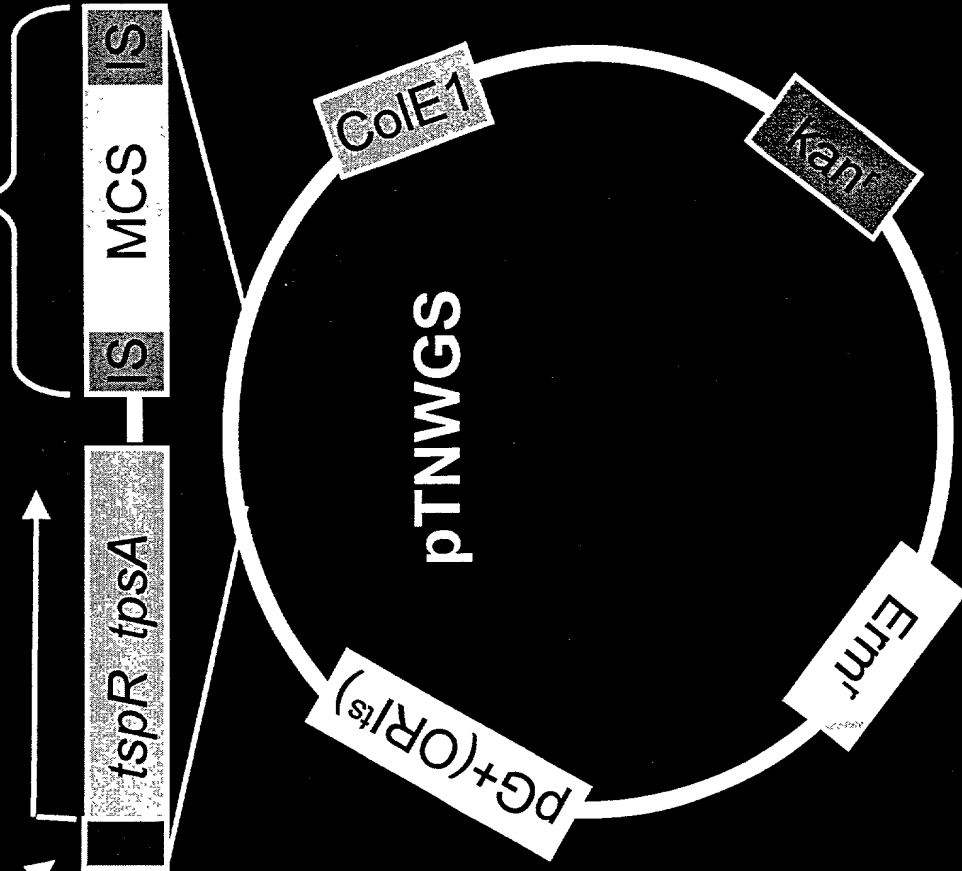
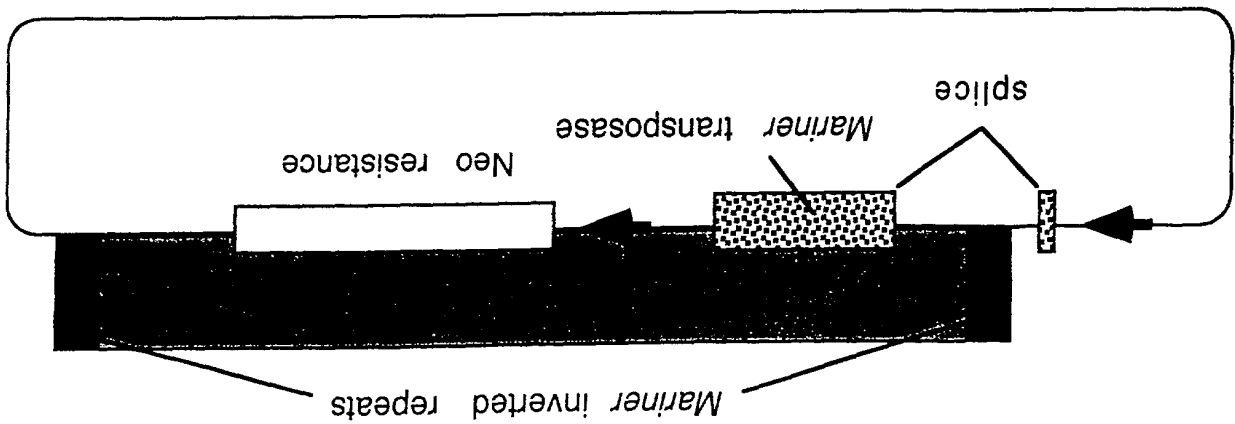


Figure 1C

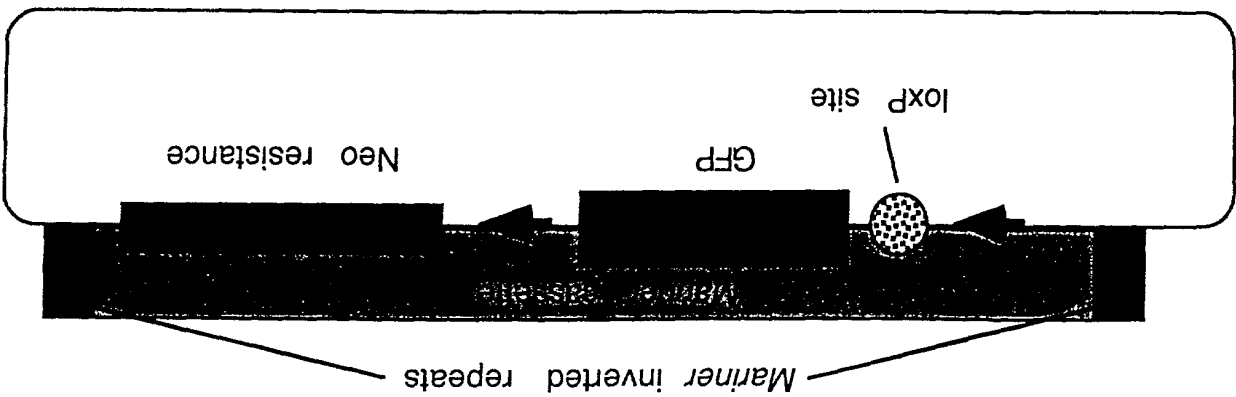
Figure 2

Efficient integration into mammalian cells using *Mariner* transposons



A

Mariner transposon for inserting loxP sites at loci with desirable expression properties



B

Methodology for Isolating Hosts with improved Phenotypes by Whole Genome Shuffling (WGS)

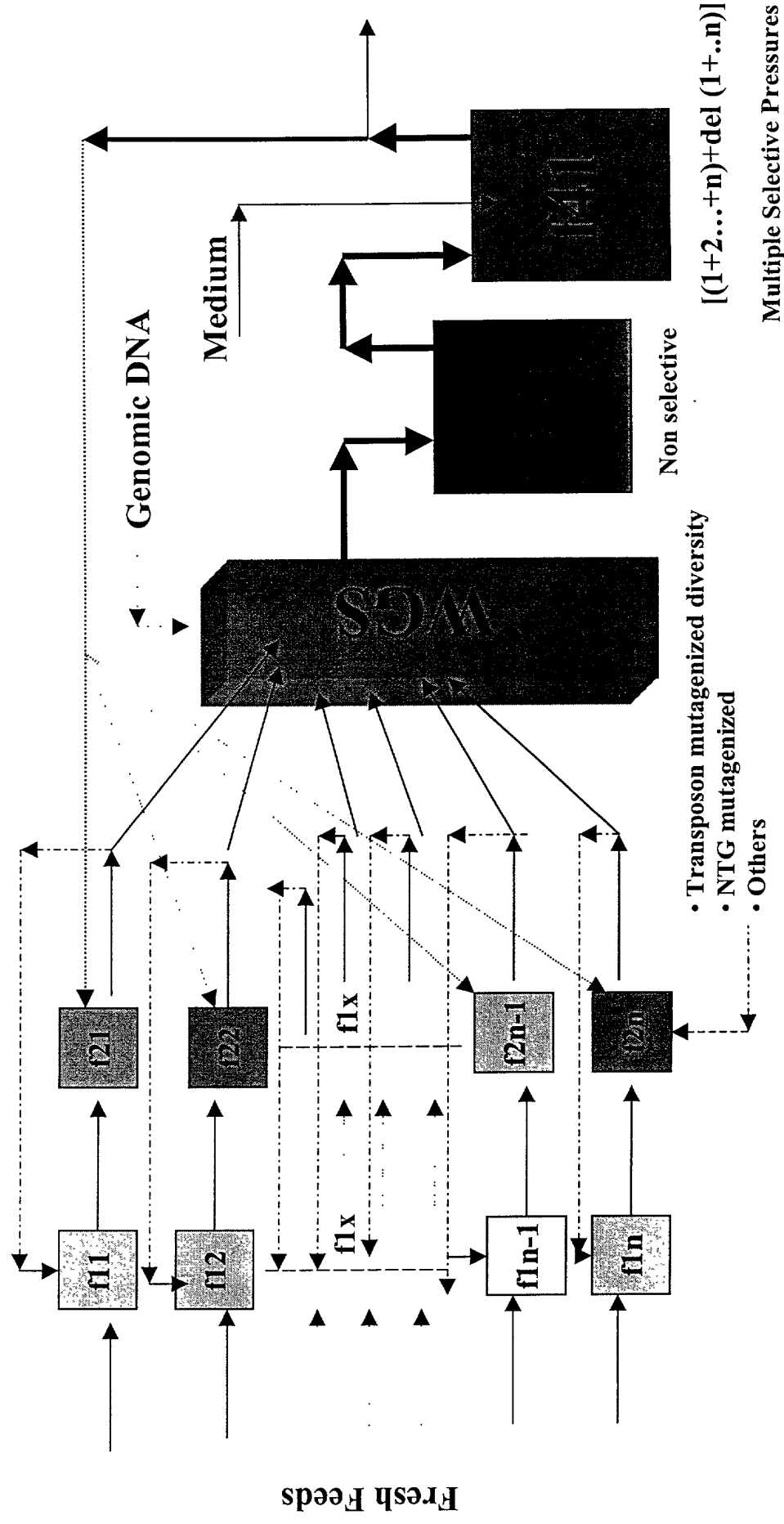


Figure 3

Shuffling of Genomes In Vitro: Formation of transposomes

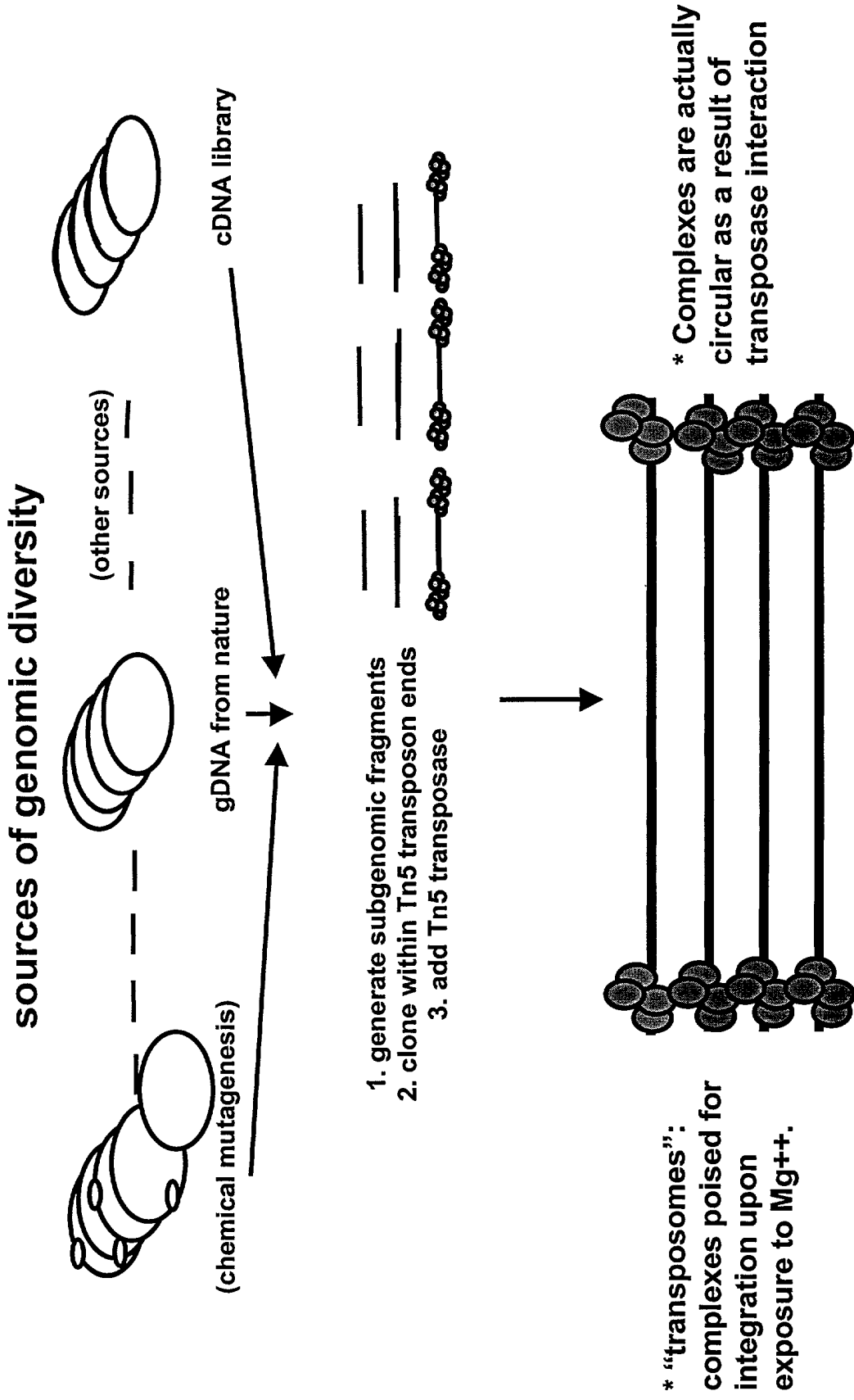


Figure 4A

Shuffling of Genomes *In Vitro*:

Breeding multiple donor genomes with a single acceptor genome

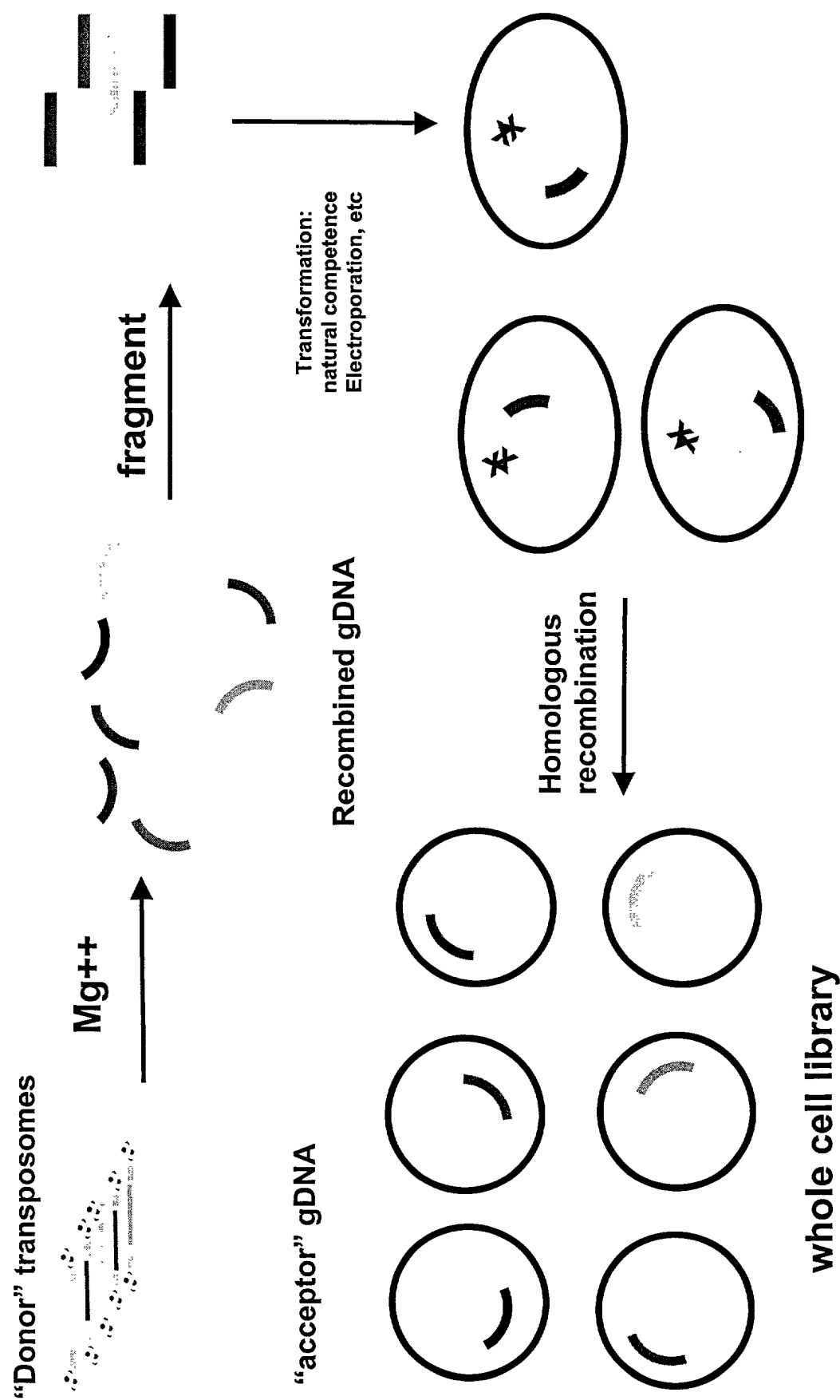


Figure 4B

Shuffling of Genomes *In Vitro*:

Breeding multiple donor genomes with multiple acceptor genomes

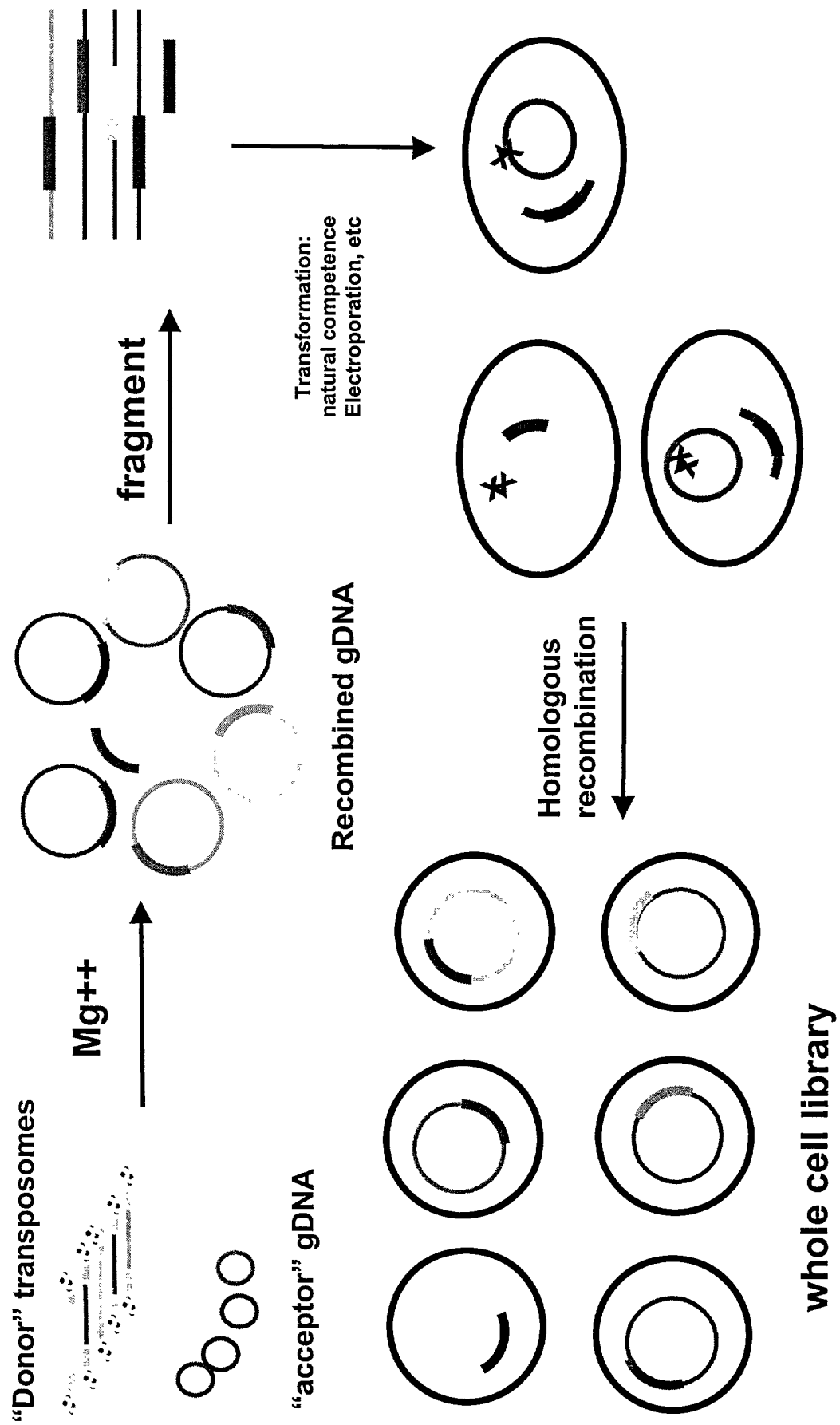


Figure 4C

Shuffling of Genomes *In Vitro*: Split pool recursive *in vitro* recombination of multiple genomes

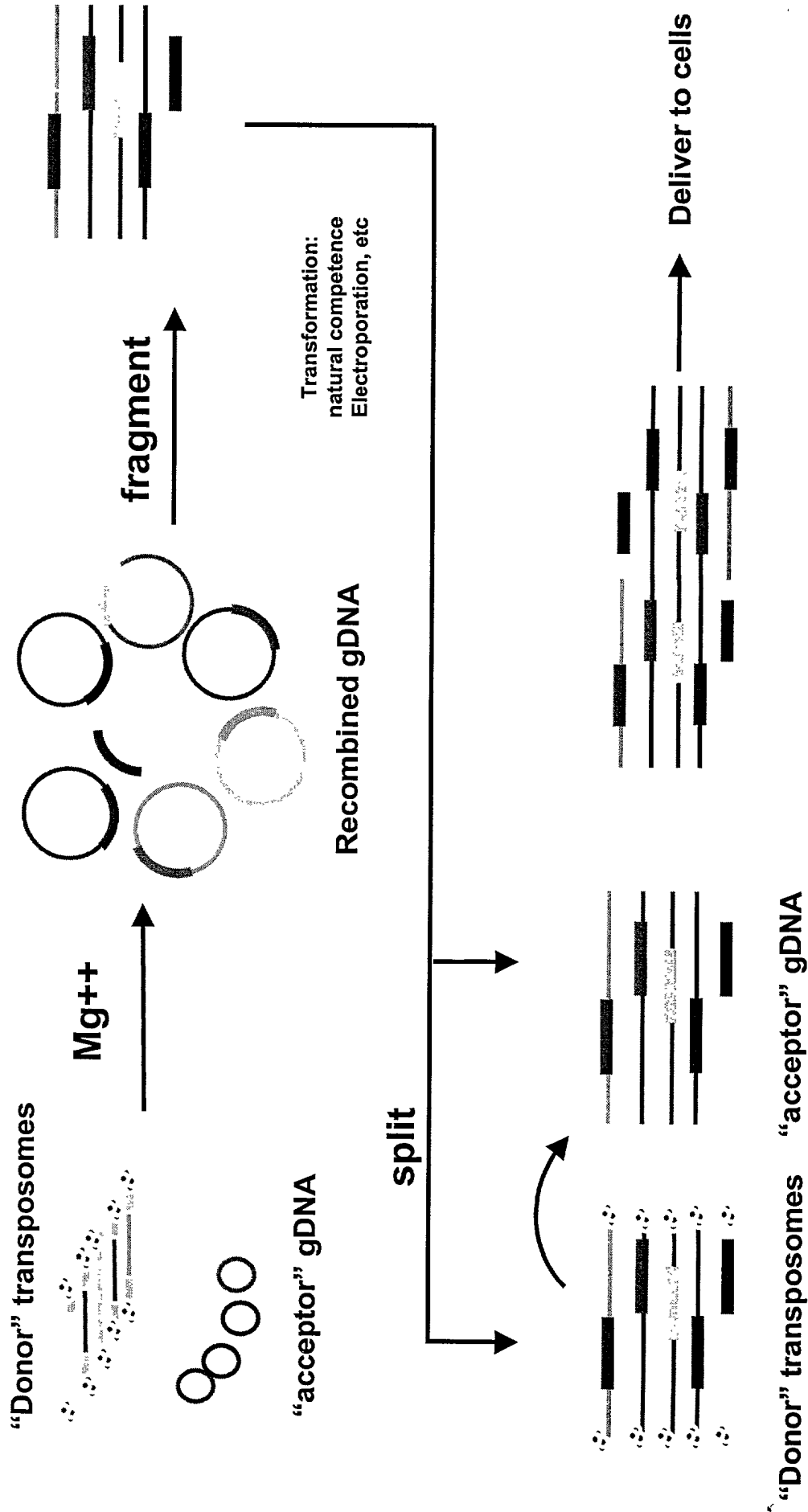


Figure 4D